MSC GUIDELINES FOR THE REVIEW OF SANITARY/SEWAGE SYSTEMS/ OVERBOARD DISCHARGES AND DRAINS

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References

a. Title 33 CFR 159 Marine Sanitation Devices (All Vessels)

b. Title 46 CFR 56.50-1 Piping systems, design requirements pertaining to specific systems (Vessels subject to Subchapter F)

c. 46 CFR 56.50-95 Overboard Discharges and Shell Connections (Vessels subject to Subchapter F)

d. Title 46 CFR 119.720 and 119.730 Nonmetallic and nonferrous metallic piping materials (Subchapter K Vessels)

e. Title 46 CFR 179.350 Openings in the side of a vessel below the bulkhead or weather deck(Subchapter T Vessels)

f. Title 46 CFR 182.720, and 182.730 Nonmetallic and nonferrous metallic piping materials (Subchapter T Vessels)

g. COMDTINST M16000.7, Marine Safety Manual, Vol. II Material Inspection, Chapter 18, Part K, Marine Sanitation Devices.

h. COMDTINST M16714.3E, Equipment Lists, 159.015 Marine Sanitation Devices

Disclaimer

These guidelines were developed by the Marine Safety Center staff as an aid in the preparation and review of vessel plans and submissions. They were developed to supplement existing guidance. They are not intended to substitute or replace laws, regulations, or other official Coast Guard policy documents. The responsibility to demonstrate compliance with all applicable laws and regulations still rests with the plan submitter. The Coast Guard and the U. S. Department of Transportation expressly disclaim liability resulting from the use of this document.

Contact Information

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Applicable to All Vessels

- Marine Sanitation Devices - Vessels with installed toilets must install an operable, certified MSD, as follows: (See Title 33 CFR § 159.5)
  - Vessels 65 feet in length and under must have a Type I, II, or III device (Type I MSD's are still permitted on new installations because of a USCG waiver issued by Federal Register notice of Monday, 10 July 1978 and clarified in 33 CFR 159.7 in 1997.); and
  - Vessels over 65 feet in length must have a Type II or III device. Waivers are permitted for Type I devices installed prior to 31 January 1980.
  - A Type III tank is used solely to store sewage and flushwater. The tank shall operate at ambient air temperature and pressure. Vacuum collection systems cannot be certified under 159.12(a) and must be submitted for engineering review to G-MSE-3.
- The MSD may not receive gray waters or galley wastes. Adding these wastes can greatly increase the hazards of putrefied material accumulating in the tank. Waivers may be granted on a case by case basis for those vessels operating exclusively in "zero discharge areas" in which discharge of treated and untreated sewage, as well as gray water is prohibited. Reference G-MSE-3 Policy File Memorandum of 7 July 1999.
- The capacity of a MSD must be adequate for the vessel. Type I and II device capacities are determined by manufacturers and should be evaluated with respect to average passenger waste per day (1.5 liters) and the amount of water used by different toilet flushing systems (conventional, vacuum, etc). Type III device capacities, in addition to the above, must account for the vessel's route for proper discharge. Installing an MSD with inadequate capacity may lead to a discharge in violation of EPA regulations.

- Vents from the MSD do not cross-connect with other vents.

- Baffles in sewage retention tanks, if any, must have openings to allow fluid and vapor to flow freely across the top and bottom of the tank. (Reference 33 CFR 159.81)

- Each sewage retention device must have a means of indicating when the device is more than ¾ full by volume (Reference 33 CFR 159.83)

- Sewage removal fittings shall be either 1 ½ " or 4" nominal pipe size (Reference 33 CFR 159.87)

Vessels Subject to Title 46 CFR Subchapter F

- Overboard Discharges and Shell Connections: (Reference 46 CFR § 56.50-95)

  - Discharges originating at any level must be provided with an automatic, non-return valve at the shell, if penetrating the shell either;

    a) more than 17.5 inches below the freeboard deck, or,

    b) less than 23.5 inches above the summer load waterline,

    - Non-return valve, unless otherwise required, may be omitted if;

      a) Piping not less than Sched. 80 for nominal pipe sizes through 8".
      b) Piping not less than Sched. 60 for nominal pipe sizes btwn 8"– 16"
      c) Piping not less than Sched. 40 for nominal pipe sizes above 16".

  - Discharges originating from spaces below the freeboard deck or from within enclosed superstructures on the freeboard deck shall be fitted with efficient and accessible means for preventing water from passing inboard. Should take the form of one of the following:

    a) Discharge shall have one automatic nonreturn valve with a positive means of closing it from above the freeboard deck.

b) Exceptions:

i) Vertical distance exceeds 0.01L - Where the vertical upward distance from the summer load line to the inboard end of the discharge pipe where flooding can take place exceeds 0.01L (L = Length of Vessel), discharge may have two automatic nonreturn valves without positive means of closing. This is provided that the inboard valve is always accessible for examination.

ii) Vertical distance exceeds 0.02L - Where the vertical distance exceeds 0.02L, a single automatic nonreturn valve without positive means of closing is acceptable.

- Pipes terminating at the shell shall be fitted with bends or elbows between the outboard openings and the first rigid connection inboard. In no case shall such pipes be fitted in a direct line between the shell opening and the first inboard connection.

- The thickness of discharge connections outboard of the shutoff valves must meet the following:

a) Piping is not less than Sched. 80 for nominal pipe sizes through 8".
b) Piping is not less than Sched. 60 for nominal pipe sizes above 8" and below 16".
c) Piping is not less than Sched. 40 for nominal pipe sizes above 16".

- Sewage Tank Vents/ Grey Water Tank Vents- (Reference 46 CFR 56.50-85)

  - Tank vents must remain within the watertight subdivision boundaries in which the tanks they vent are located.

- Bulkhead Penetrations: Where pipes are carried through bulkheads, decks, or tank tops, the integrity of the structure shall be maintained. (See Title 46 CFR §56.50-1)

- Sewage Tank Vents/ Grey Water Tank Vents- (See 46 CFR 56.50-85)

  - Vents extending above the freeboard deck must be at least Sched. 40.

- Vents are not cross-connected with any other systems.

Applicable to Small Passenger Vessels

- Watertight integrity (Reference 46 CFR 179.350, T-boats)
  - If the discharge pipe penetrates the hull below a line drawn parallel to and at least 150 mm (6 inches) above the deepest load waterline, it must have a means to prevent water from entering the vessel if the pipe fractures or other wise fails. A positive action valve or cock located as close as possible to the hull is acceptable.
  - If the discharge pipe is inaccessible, a shutoff valve shall be:
    - Operable from the weather deck or any other accessible location above the bulkhead deck; and
    - Labeled at the operating point for identity and direction of closing
  - Any connecting device or valve in a hull penetration must not be cast iron.
  - Each plug cock in an inlet or discharge pipe must have a means, other than a cotter pin, to prevent its loosening or removal from the body.
  - Non-metallic Piping Materials: (Reference 46 CFR 182.720, T-Boats).
    - Each hull penetration must be accomplished using an acceptable metallic through deck or through bulkhead fitting that is welded or attached to the bulkhead or deck using an accepted method.
      - One or more metallic shutoff valves must be installed in accordance with the following guidance:
        - One metallic shutoff valve is permitted if operable from above the bulkhead deck.

- Two metallic shutoff valves are permitted on either side of the bulkhead provided immediate access to both is possible. Operation from above the bulkhead deck is not required.